

What is Claimed:

1. An insert for a cutting tool useable in a milling machine for cutting a plurality of parallel grooves in a hard surface, said parallel grooves having ridges between adjacent grooves, said cutting tool having a forward cutting end having a seat and a rearward cylindrical shank receivable in a cylindrical opening in a tool holder, said insert comprising

a forward tip having an outer diameter,

a mid-section behind said tip,

said mid-section having a first diameter defined by said outer diameter of said forward tip and a second diameter rearward of said first diameter,

a base axially behind said mid-section,

a fillet between said mid-section and said base,

said fillet having a maximum outer diameter,

said base defining a cylinder having an outer diameter, and

a surface extending outward of said fillet to said outer diameter of said base,

wherein said outer diameter of said base will engage said ridges between said grooves and reduce an elevation of said ridges with respect to said grooves.

2. An insert in accordance with claim 1 wherein said outer diameter of said base is greater than 0.750 inch.

3. An insert in accordance with claim 1 wherein at least a portion of said mid-section is cylindrical.

4. An insert in accordance with claim 1 wherein said outer diameter of said base comprises a plurality of arcuate flanges and said arcuate flanges are separated by indentations.

5. An insert in accordance with claim 4 wherein said arcuate flanges comprises approximately fifty percent of a circumference of said base.

6. An insert in accordance with claim 4 wherein said arcuate flanges have outer surfaces and said outer surfaces of said arcuate flanges are segments of a cylinder having a diameter equal to the maximum outer diameter of said base.

7. An insert in accordance with claim 4 wherein said base and said flanges of said insert have nearly vertical side surfaces, said side surfaces tapering toward an axis of said insert at an angle of three to eight degrees to facilitate removal of said insert from a die used to form said insert.

8. An insert in accordance with claim 1 wherein said surface extending outward of said fillet is nearly planar and sloping gradually rearwardly.

9. An insert in accordance with claim 8 wherein said surface extending outward of said fillet slopes downward at an angle of about eight degrees from a horizontal.

10. A cutting tool for use on a milling machine for cutting a plurality of parallel grooves in a hard surface, said parallel grooves having ridges between adjacent grooves, said cutting tool comprising

- a tool body having a cutting end and a cylindrical shank,
- said cutting end having a seat at a forward end thereof,
- an insert bonded into said seat,
- said insert having a tapered cutting tip, a mid-section behind said tapered cutting tip, and a base behind said mid-section,
- said base defining an outer diameter,
- a fillet between said mid-section and said base,
- said fillet having an outer diameter less than said outer diameter defined by said base, and
- said insert further having a surface extending radially outward of said fillet and extending to said outer diameter defined by said base.

11. A tool in accordance with claim 10 wherein said outer diameter of said base is greater than 0.750 inch.

12. A tool in accordance with claim 10 wherein said outer diameter of said base is large enough to engage one of said ridges between said grooves and wherein an elevation of said one of said ridges with respect to said grooves is reduced.

13. An insert in accordance with claim 10 wherein at least a portion of said mid-section is cylindrical.

14. A tool in accordance with claim 10 wherein said outer diameter of said base of said insert comprises a plurality of arcuate flanges and said arcuate flanges are separated by indentations.

15. A tool in accordance with claim 14 wherein said indentations extend radially inward of said outer diameter defined by said base but do not extend inward of said fillet.

16. A tool in accordance with claim 14 wherein said arcuate flanges comprises approximately fifty percent of a circumference defined by said base.

17. An insert in accordance with claim 14 wherein said arcuate flanges have outer surfaces and said outer surfaces of said arcuate flanges are segments of a cylinder having a diameter equal to the maximum outer diameter of said base.

18. An insert in accordance with claim 12 wherein said surface extending outward of said fillet is nearly planar and sloping gradually rearwardly.

19. An insert in accordance with claim 18 wherein said surface extending outward of said fillet and said surface slopes downward at an angle of about eight degrees from a horizontal.

20. An insert in accordance with claim 14 wherein said base, said flanges, and said insert have nearly vertical side surfaces, said side surfaces tapering toward an axis of said insert at an angle of three to eight degrees to facilitate removal of said insert from a die used to form said insert.

21. A rotary cutting tool for use on a cutting machine comprising
a tool body having a cutting end and a cylindrical shank,
said cutting end having a seat at a forward end thereof,
an insert bonded into said seat,
said insert having a tapered cutting tip, a mid-section behind said tapered cutting tip, and a base behind said mid-section,
said base defining an outer diameter,
a fillet between said mid-section and said base,
said fillet having an outer diameter less than said outer diameter defined by said base, and

said insert further having a surface extending radially outward of said fillet to said outer diameter defined by said base.

22. A tool in accordance with claim 21 wherein said outer diameter of said base of said insert comprises a plurality of arcuate flanges and said arcuate flanges are separated by indentations.

23. An insert in accordance with claim 22 wherein said arcuate flanges have outer surfaces and said outer surfaces of said arcuate flanges are segments of a cylinder having a diameter equal to the maximum outer diameter of said base.

24. An insert in accordance with claim 23 wherein said surface extending outward of said fillet slopes downward at an angle of about eight degrees from a horizontal.

25. A tool in accordance with claim 21 wherein cutting machine is a trenching machine and said outer diameter of said base is greater than 1.250 inch.

26. A tool in accordance with claim 25 wherein said indentations extend radially inward of said outer diameter defined by said base but do not extent inward of said fillet.

27. A tool in accordance with claim 25 wherein said arcuate flanges comprises approximately fifty percent of a circumference defined by said base.

28. An insert in accordance with claim 25 wherein at least a portion of said mid-section is cylindrical.

29. An insert in accordance with claim 25 wherein said base, said flanges and said insert have nearly vertical said surfaces, said side surfaces tapering toward an axis of said insert at an angle of three to eight degrees to facilitate removal of said insert from a die used to form said insert.

30. An insert in accordance with claim 21 wherein said surface extending outward of said fillet is nearly planar and sloping gradually rearwardly.

31. A cutting tool for use on a milling machine for cutting a plurality of parallel grooves in a hard surface, said parallel grooves having ridges between adjacent grooves, said cutting tool comprising

a tool body having a cutting end and a cylindrical shank,
said cutting end having a seat at a forward end thereof,
an insert bonded into said seat,
said insert having a tapered cutting tip, a mid-section behind said tapered cutting tip, and a base behind said mid-section,
said mid-section having a maximum outer diameter,

said base defining an outer diameter that is larger than said maximum outer diameter of said mid-section,

a surface extending from said mid-section to said outer diameter defined by said base, and

said outer diameter defined by said base being large enough to engage one of said ridges wherein an elevation of said one of said ridges is reduced with respect to said groove.